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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/820,693	03-30/2001	Robert J. O'Donnell	015290-509	5643

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06/05/2003

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EXAMINER

KACKAR, RAM N

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 06/05/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/820,693

Applicant(s)

O'DONNELL ET AL.

Examiner

Ram N Kackar

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 30 March 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☐ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 and 20-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 11-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4,5,6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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### DETAILED ACTION

1. Applicant's election of claims 11-19 in Paper No. 8 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 1-10 and 20-23 are withdrawn.

#### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 11-12, 16 and 18-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Yuomiko, Itou (JP 10004083).

Yuomiko, Itou disclose Cerium oxide coating on the inside of a plasma chamber, clamp ring or shield ring etc (Abstract).

4. Claims 11-12 and 18-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Holcombe et al (US5668072).

Holcombe et al disclose Cerium oxide coating of both types on the inside of a heat treatment furnace (Abstract, Col 1 line 2, Col 2 line 40, Col 3 lines 7-50, Col 4 lines 8-58, Col 5 to end).

#### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 11-15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ravi Rungta (US 5362335).

Ravi Rungta discloses corrosion-resistant barrier coating of cerium oxide on aluminum alloy and teaches that the corrosion resistance is superior to that of aluminum oxide (Abstract, Col 1 lines 23 to Col 2 line 32 and Col 3 line 41).

Ravi Rungta does not expressly disclose the coated alloy of aluminum as a part to be used in an apparatus for semiconductor manufacturing and the thickness of the film being 0.001-0.050 inches.

Plasma chambers and many other parts used in semiconductor manufacturing are frequently made of aluminum and may also have anodized coating for corrosion resistance.

Therefore it would have been obvious for one of ordinary skill in the art at the time invention was made to have a cerium oxide coating on the inside of the chamber to have better anti corrosion than even that of anodized aluminum.

Cerium oxide film thickness would be a parameter depending upon protection required with the knowledge that too thick films may tend to peel off due to dissimilar thermal coefficients.

7. Claims 11-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Qian et al (US 6447636).

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Qian et al disclose parts of a plasma process chamber for semiconductor manufacturing made of ceramic like aluminum oxide combined with an oxide of Group IIIB metal like cerium (Col 2 lines 34-40 and Col 6 lines 2-53).

Qian et al do not expressly disclose the claimed film thickness. However, as stated above it would be obvious to have such a thickness of protective film.

It is obvious that the combination could be either a coating or a bulk part of ceramic containing Group IIIB metal oxide like cerium as a part of it.

Therefore it would have been obvious for one of ordinary skill in the art at the time invention was made to have a cerium oxide coating or cerium oxide as a component of the ceramic for anti erosion protection.

8. Claims 11 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakahara et al (US 6383964).

Nakahara et al disclose corrosion resistant ceramic member for a plasma chamber for semiconductor manufacturing containing cerium oxide (Col 1 lines 2-12, Col 3 lines 22-38, Col 7 line 62 to Col 8 line 42 and example 4 and 5).

Therefore it would have been obvious for one of ordinary skill in the art at the time invention was made to have a cerium oxide coating or cerium oxide as a component of the ceramic.

9. Claims 11-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Han et al (US6123791).

Han et al disclose Cerium oxide coating of process kit of aluminum oxide ceramic for a plasma chamber (Col 1 lines 2-20 and Col 2 lines 1-55).

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Han et al also do not expressly disclose the claimed film thickness. However, as stated above it would be obvious to have such a thickness of protective film.

Therefore it would have been obvious for one of ordinary skill in the art at the time invention was made to have a cerium oxide coating or cerium oxide as a component of the ceramic.

10. Claims 11-12, 15 and 19 are rejected under 35 U.S.C. 103(a) being unpatentable over Bamberg et al (US5721057).

Bamberg et al disclose Cerium oxide containing coating of metal structural parts undergoing high temperature and gases (Col 1 lines 8-22, line 64, Col 2 lines 1-8, 54-55 and example 1,2 and 4). The layer thickness is disclosed to be 0.4 mm (Col 3 lines 27-28)

Bamberg et al do not expressly disclose the metal structure to be a part of an apparatus for semiconductor manufacturing.

However as the part has to work at high temperature and in hot gases it could very well work in a semiconductor apparatus.

Therefore it would have been obvious for one of ordinary skill in the art at the time invention was made to have a cerium oxide containing coating for thermal insulation and anti corrosion.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Matijasevic et al (US 6527866) discloses (Col 4 lines 1-10) cerium oxide coating.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 703 305 3996. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703 308 1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9310 for regular communications and 703 872 9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0661.

RK  
June 2, 2003

*R. N. Kackar  
Primary Examiner  
Art Unit 1763*